

## Arroyo Santa Rosa Valley Groundwater Basin

- Groundwater Basin Number: 4-7
- County: Ventura
- Surface Area: 3,730 acres (5.8 square miles)

### Basin Boundaries and Hydrology

This basin underlies Arroyo Santa Rosa Valley, located in southern Ventura County. The basin is bounded on the north by the Santa Rosa fault, which cuts through the Las Posas Hills (Jennings and Strand 1969), on the south and east by the Santa Monica Mountains (CSWRB 1956), and on the west by Pleasant Valley Groundwater Basin where a constriction occurs in the Holocene alluvium (CSWRB 1956; Jennings and Strand 1969). Ground surface elevations range from about 200 feet in the west to about 400 feet above sea level in the east (CSWRB 1956). The major hydrologic features are Arroyo Santa Rosa and Conejo Creek which drain the surface waters westward toward the Pacific Ocean (CSWRB 1956). Average annual rainfall ranges from 14 to 16 inches.

### Hydrogeologic Information

The water-bearing units in this basin are alluvium and parts of the San Pedro Formation (CSWRB 1956). Average specific yield is about 5 percent for the basin and well yields average 900 to 1,000 gal/min (CSWRB 1956; Panaro 2000a). Groundwater is dominantly unconfined in this basin, except in the lower San Pedro Formation in the western part of the basin (CSWRB 1956).

#### ***Water Bearing Formations***

**Alluvium.** The Pleistocene to Holocene age alluvium is up to 200 feet thick and consists of gravel, sand, and clay (CSWRB 1956; DWR 1959).

**San Pedro Formation.** The alluvial gravel, sand, silt and clay of the Pleistocene age San Pedro Formation reach about 700 feet in thickness and contain lenticular sand and gravel beds that cannot be traced from well to well. In the western part of the basin, the lower San Pedro Formation contains a more continuous gravel bed that is about 100 feet thick and probably equivalent to the Fox Canyon aquifer found throughout basins to the west (CSWRB 1956; DWR 1959).

#### ***Restrictive Structures***

The structure of this basin is dominated by the east-trending Santa Rosa syncline that folds the San Pedro and Santa Barbara Formations (CSWRB 1956). This syncline helps direct groundwater flow in the San Pedro Formation. The Santa Rosa fault zone places the semi-permeable Sespe and Topanga Formations against more permeable San Pedro Formation along the north side of the basin (CSWRB 1956). This juxtaposition causes a barrier to groundwater flow into the basin from the north. A sharp change in water level in the western part of the basin is likely due to a roughly north-trending fault that restricts groundwater flow (Panaro 2000b).

### **Groundwater Level Trends**

Since 1980, groundwater levels have fluctuated in some wells as much as 115 feet; however, most wells only show a range of 30 to 40 feet. Hydrographs show an annual rise and fall of water level of about 20 feet with longer-term variations apparently not following precipitation cycles. In the western part of the basin, groundwater levels declined about 50 feet during 1992 through 1997 and recovered about 25 feet during 1998 through 1999. In the central part of the basin, groundwater levels fluctuated about 20 feet during the 1990s, and in the eastern part of the basin, groundwater levels rose about 115 feet during 1991 through 1999.

### **Groundwater Storage**

**Groundwater Storage Capacity.** Estimates of total storage capacity range from about 94,000 to 103,600 af (Panaro 2000a). The more conservative estimate is consistent with an area of about 3,660 acres, about 500 feet of average saturated thickness, and an average specific yield of about 5 percent.

**Groundwater in Storage.** In 1999, the basin was an estimated at around 70 to 80 percent full, implying groundwater in storage of about 70,500 af (Panaro 2000a).

### **Groundwater Budget (Type A)**

Limited estimates of recharge and pumping in the basin are available. Recharge is estimated at 1,200 to 2,900 af/yr for underflow, 4,100 to 5,200 af/yr for irrigation return, about 300 af/yr from septic systems, and less than 10 af/yr from leaking potable water pipes (Panaro 2000a). Pumping was estimated at less than 5,000 af for 1999 (Panaro 2000a).

### **Groundwater Quality**

**Characterization.** According to the sampling of 7 public supply wells, TDS content ranges from 670 to 1,200 mg/L and averages 1,006 mg/L.

**Impairments.** Elevated sulfate and nitrate concentrations are observed in the groundwater (Panaro 2000b).

### **Water Quality in Public Supply Wells**

Constituent Group <sup>1</sup>	Number of wells sampled <sup>2</sup>	Number of wells with a concentration above an MCL <sup>3</sup>
Inorganics – Primary	8	1
Radiological	8	0
Nitrates	8	5
Pesticides	8	0
VOCs and SVOCs	8	0
Inorganics – Secondary	8	2

<sup>1</sup> A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

<sup>2</sup> Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

<sup>3</sup> Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

## Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: to 1,200 gal/min, 900 to 1,000 gal/min (Panaro 2000a)	Average: 600 gal/min (CSWRB 1956)
Total depths (ft)		
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

## Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Ventura County	Groundwater levels	6/bimonthly
Department of Health Services and cooperators	Title 22 water quality	7

## Basin Management

Groundwater management:	<a href="#">Camrosa Water District, Fox Canyon Groundwater Management Agency</a> has a <a href="#">groundwater management plan</a> under AB-2995.
Water agencies	
Public	<a href="#">Camrosa Water District, Fox Canyon Groundwater Management Agency</a>
Private	

## References Cited

- California State Water Resources Board (CSWRB). 1956. *Ventura County Investigation*. Bulletin 12. Two Volumes.
- California Department of Water Resources (DWR). 1959. *Water Quality and Water Quality Problems, Ventura County*. Bulletin 75. 195 p.
- Jennings, C.W., and Strand, R.G., 1969, *Geologic Map of California: Los Angeles Sheet*, Olaf P. Jenkins Edition: California Division of Mines and Geology, scale 1:250,000, 1 sheet.
- Panaro, D. 2000a. Fox Canyon Groundwater Management Agency: Written Communication to R.R. Davis (DWR), March 21, 2000.
- \_\_\_\_\_. 2000b. Fox Canyon Groundwater Management Agency: Oral communication with T. M. Ross (DWR), September 29, 2000.

## **Additional References**

California Department of Public Works (CDPW). 1933. *Ventura County Investigation*.  
Division of Water Resources. Bulletin 46, 244 p.

California Department of Water Resources (CDWR). 1959. *Water Quality and Water Quality  
Problems, Ventura County*. Bulletin 75. 195 p.

## **Errata**

Updated groundwater management information and added hotlinks to applicable websites.  
(1/20/06)